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Mitchell, S.W.

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**LOCOMOTOR ATAXIA CONFINED TO THE ARMS:
REVERSAL OF ORDINARY PROGRESS.***

By S. WEIR MITCHELL, M.D.,

E. C. B., M.D., of California, aged 55. (Private Note Book; Case No. 1167.)

This gentleman was in active practice until two years ago. He has no constitutional disease of any description.

The patient, by his own description, was a well man up to July, 1887, possessing nearly perfect health. Near to that time he observed that, in writing with a steel pen, his hand began to change—becoming unsteady. There was no tremor, certainly none manifested in his hand writing. He only discovered that there was slightly increasing numbness in the cushions of the finger ends of both hands, extending through the hand, up into the arm, through the chest and down over the belly and back. About September 20th, this was slightly present in the toes, but more distinctly afterwards. There seems to have been no preceding eye or bladder symptoms, nor, indeed, any warning such as usually attends an outbreak of locomotor ataxia. The character of the case has not greatly changed since the first attack; it has only shown more decisively its nature. Perhaps the best description I could give of it would be that which I take from my note book of January 15th, 1888. To make clear what follows, I will state that the case is in my experience exceptional. I have seen none which I could place along side of it. It consists

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of an attack of locomotor ataxia affecting practically the upper extremities. In other words, the legs now show the same condition which one is apt to see in ordinary cases of this disease in the arms after the legs are pretty well on their course of degenerative change.

Nutrition.—This gentleman weighs 138 pounds; has lost 20 pounds; his height is 5 feet 9 inches; his limbs are thin; throughout the body the muscles are more or less flabby, notably in the upper extremities, but nothing to be called atrophy; the legs are liable to swell slightly during the day; the arms are more liable to be swollen after sleep.

The patient, an accomplished physician, declares the swelling not to be at any time œdematous. It offers slight resistance to pressure, and but a part of the swelling is due to serum.

There is an appearance of yellow pallor about him which caused me to request Dr. John K. Mitchell to make an examination of the blood. The result surprised me. The corpuscles amount to 3,980,000 per C. C. M.; the coloring matter is 75 per cent. of the normal, by Fleischl's test. Certainly the appearance of the skin would seem to indicate a want of blood not shown to exist by accurate test, repeated again and again. This condition of things I have several times seen in post. sclerosis, a not excessive want of color or corpuscles, and a whiteness of skin and mucous surfaces, which once we would have accepted as sure evidence of anæmia.

Sensation.—There is no pain of the character of neuralgia. He says that since his boyhood he has been liable to aches in the great trochanter and between the shoulders.

Touch.—At a half inch the compass points begin to be felt as two in the finger of either hand. There is no remarkable difference between the two hands. The sensation of numbness with which the disease began are, perhaps, more pronounced in the legs now than at first; but about the clavicles the sensation in all kinds appears to be normal; also it is fair for heat and cold, but decisions as to these are less rapid in the arms than in the legs. The pain sense is everywhere preserved. I ought to add that when the left

hand is chilled it is apt to cause pain to run up the arm on that side. The special senses appear to be normal.

Dr. G. E. de Schweinitz gives the following statement of the eye conditions: "Vision in each eye with correcting glasses, normal; no disturbances of accommodation and his reading glasses allow comfortable range; 3 degrees of insufficiency of the interni; no other muscular anomalies, except slight drooping of the right upper eyelid. Pupils present normal reactions for light and accommodation; ophthalmoscope shows fine floating vitreous opacities; distinctly gray optic discs with hazy edges and general epithelial choroiditis. Form fields are normal; there is concentric contraction of the color fields. From these facts I conclude that there is beginning gray degeneration of the optic nerves, as well as the disturbances of the chroid and vitreous humor."

Motion.—Motion is generally weak; when he walks any distance he moves slowly, and in action the arms tire more easily than the legs. He stands well with his eyes open; but with his eyes shut he sways one inch to the right and an inch and a half forward, so that his station may be stated to be good for a man in his condition. It certainly shows how little ataxic trouble there is in the lower limbs. He moves the legs well, and the common actions of the feet exhibit little inco-ordination in these parts. On the other hand, the upper limbs are awkward in their movements. There is a great lack of co-ordination in every effort to make delicate adjustments, as when he attempts to touch his nose or ear with the eyes shut, or to bring the forefinger of his right hand in contact with the tip of the little finger of the left hand. He fails also in the test of weights; he is unable to tell the difference between an ounce placed in his palm and a half ounce, or an ounce and a half. I took tracings of his efforts to hold a pencil steady. They showed no tremor—less than is common, and this negative symptom is a remarkable one in ataxics. The effort to draw *a* from right to left resulted in a singular illustration of dejective co-ordination.

Electrical Reactions.—There are no unusual peculiarities.

Muscular Reaction.—All the muscles of the arms react to a direct blow, but are incapable of being reinforced by motion. The leg muscles have, as I judge, about the normal amount of response to the hammer blow, but are readily reinforced by hand motions.

It is interesting to contrast these conditions of the leg and arm muscles. Elbow jerk is lost on both sides, and non-reinforcible by motion or sensation. Knee jerk is *excessive* on both sides and is easily reinforced. Ankle jerk is also extreme, and when powerfully reinforced a slight clonus exists. Thus, if the tip of the foot be pushed upward so as to stretch the tendo Achillis, the blow on it results in two or three forward movements of the foot at the same time, the patient makes a powerful motor reinforcement. I remark in this case, as I have done in others, that a blow on the left patellar tendon gives rise to motion in the left leg, also to what seems to be a reflex jerk of the left arm. I suspect that this phenomena is due to the strong reinforcements produced by emotion; for, while it is frequently seen in the first interview with the patient, it may be impossible to evolve it at another sitting.

Secretions.—Generally normal; occasional diarrhoea; no painful gastric crises. There is no trouble with the bladder or rectum. Sexual power is lost.

Skin irritations of the soles of the feet appear to cause no motion. Testicle reflexes absent, as also abdominal reflexes.

Remarks.—This case stands alone in my experience. It is a locomotor ataxia beginning in the arms. These lose their tendon reactions, but show excess of direct mechanical excitability. In the legs we find excessive knee jerk and normal mechanical responses. The conditions seen in common cases of ataxia are here reversed. I have little doubt that in the earliest stages of this disease the tendon reactions are excessive.